WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
ISSUED FOR THE INFORMATION OF COOPERATORS
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CONTENTS

	Page
Abstracts:	
Conservation	2
Control	3
Cycles	4
Disease	4
Ecology:	
Forest type in relation to deer	5
Population control	5
Population studies	6
Swamp values	6
Rainfall in relation to bobwhite crop	6
Range management	6
Food habits:	
Fur-seal	7
Mallard	7
Mink	7
Mule deer	7
Pheasant	8
Snowshoe hare	8
Snowshoe hare damage and its control	8
Life histories:	
Bobwhite population fluctuations	9
Grouse, Sharp-tailed	9
Pheasant nesting	9
Sex resistance to starvation	10
Winter survival of bobwhite	10
Management:	
Big game	10
Bobwhite in Iowa	13
Burning	13
Abstracts--Continued	
Management--Continued	
Cover improvement	14
Deer requirements	14
Farmer-sportsman relationships	14
Forest game	15
Harvesting	15
Illinois plans	16
Multiple use of forest land	16
Planting mountain-ash	16
Permissible shooting	16
Range rehabilitation	17
Small upland refuges	17
Trail cutting in relation to deer	17
Wildlife in land planning	18
Wildlife inventories	18
Propagation:	
Cottontail rabbit	18
Distribution of game birds	18
Irradiation results	19
Pheasant	19
Pheasant; artificial incubation and brooding	19
Pheasant; care of young	19
Pheasants, Fancy	20
Pheasant; hen system	20
Wildlife research and management leaflets	20
Special articles	21
Biological bibliographies	27
Notes and news	32
Author index for this issue	35

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WILSON ORNITHOLOGICAL CLUB

Conservation

Anon. The hawks and owls are the farmers and sportsmens best friends, Poster (Federal Cartridge Co., Minneapolis, Minn.).

A two-scene poster urging protection of hawks and owls. A welcome innovation.

Conservation

Various authors. Hearings before the Select Committee on Conservation of Wildlife Resources, House of Representatives, Seventy-fourth Congress, First Session (obtainable from Hon. A. Willis Robertson, Chairman, House Office Bldg., Washington, D. C.), 121 pp., 1935.

Contains discussion of recent work and problems by representatives of chiefly Federal agencies concerned with wildlife, and prepared statements on various phases of their operations. Represented are the Biological Survey, Soil Conservation Service, Forest Service of the Department of Agriculture; the National Park Service and Reclamation Service of the Department of the Interior; the Bureau of Fisheries of the Department of Commerce; the Committee on Rivers and Harbors of the House of Representatives; the National Resources Committee; and the Izaak Walton League of America.

Conservation: In Germany

Leopold, Aldo. Naturschutz in Germany, Bird-Lore (1775 Broadway, New York, N. Y., 30 cents a copy), 38(2), March-April 1936, pp. 102-111, 6 photos, 1 table.

Comparison of results of treatment of some of the larger forms of wildlife in Germany and in the United States, the records about balancing. Human characteristics bearing on conservation are about the same in the two countries, but in Germany nature protection is one of the explicit tenets of the present ruling party. Predators having been longer exposed to intensive control are scarcer than in the United States. A tabulation is given of the numbers killed in relation to the head of game taken in several localities. A definite predator restoration policy has been begun. It is the implied assumption that only game has value that discredits the game movement in any country. To get more game at the expense of the wild environment and the wild predatory species is to get very little indeed. Bad effect of exclusive conifer planting in Germany on forest wildlife and present efforts to remedy the situation.

Conservation: Needs in the Southwest

Brown, C. B. Intelligent game conservation, Hoofs and Horns (121 E. 10th St., Tucson, Ariz., 10 cents a copy), 5(8), Jan. 1936, pp. 5, 7.

Wildlife as a basis of recreational expenditures. Growth of refuge acreage in Arizona (now 435,573) and in New Mexico (331,755). Need of research and of cooperation by landowners.

Conservation: Soil Conservation Service viewpoint

Bennett, H. H. Wild life and erosion control, Bird-Lore (1775 Broadway, New York, N. Y., 30 cents a copy), 38(2), March-April 1936, pp. 115-121, 4 photos.

Seriousness of farm erosion. Land going out of agriculture not necessarily favorable for wildlife. Aim and methods of the Soil Conservation Service. "We propose a plan of land conservation to replace the old system of exploitation". Every manipulation of the soil directly or indirectly affects wild life. "The objectives of our wild-life program may be stated briefly: (1) The avoidance, insofar as possible, of acts which would be detrimental to wild life; (2) the betterment of conditions for wild life as a whole; and (3) the development of an annual self-perpetuating crop of game, fur-bearers, and game fish to provide supplemental compensation to the farmer for lands retired from agricultural use in the interest of erosion control." Progress of the work in various States. Need for cooperation in conservation.

Control: Crow

Curtis, Paul A. Crow management, Game Breeder and Sportsman (205 E. 42nd St., New York, N. Y., 20 cents a copy), 40(4), April 1936, pp. 77-78, 95, 2 halftones.

The crow as game to be taken at "any time of year in any quantities limited only by our persistence and ability." "I am not interested in methods of poisoning them, trapping them, or dynamiting them x x x I am not a believer in their elimination." Experiences and suggestions as to calls, blinds, and conditions favorable to shooting. A photograph, probably not furnished by the author, is labeled "Jim Crow at his nefarious work." It shows crows feeding on eggs washed up by the tide.

Control: "Vermin"

McAtee, W. L. What is vermin?, Outdoor Life (353 Fourth Ave., New York, N. Y., 15 cents a copy), 77(6), June 1936 (May), pp. 40-41, 52.

One man's vermin is another man's game or fur. Control should be exercised only when necessary and then only by legal and humane methods.

Non-sportsmen have a valid interest in wildlife which should be respected by sportsmen. Improvement of environment a more effective method than vermin control for increasing game. The captions of some illustrations not seen by the ostensible author are opposed in tenor to the article which is largely ghost-writing by Arthur Grahame based on interviews and publications by McAtee.

Cycles

Elton, Charles, and G. Swynnerton. The Canadian snowshoe rabbit inquiry, 1934-35, Canadian Field-Naturalist (582 Mariposa Ave., Rockcliffe Park, Ottawa, Canada, 25 cents a copy), 50(5), May 1936, pp. 71-81, 4 figs., 4 tables.

Fourth annual report on the fluctuations of the snowshoe hare; the results of the investigation to date show a well-marked cycle of about 10 years in the rabbit population, shared also by those of the red fox and lynx.

Disease: Lead poisoning, etc.

Green, R. G., and J. E. Shillinger. Minnesota Wildlife Disease Investigation (obtainable from Dr. J. E. Shillinger, Biological Survey, Washington, D. C.), Jan. 1936, pp. 100-112, tables 87-90, mimeographed.

Contains a discussion of lead poisoning in waterfowl; a Special Report on the Production of Lead Alloys for the Prevention of Lead-poisoning in ducks, by Robert G. Green and Ralph L. Dowdell (based on rapid disintegration of a lead-magnesium alloy in the gizzard of ducks); a discussion of a type of paralysis occurring in penned foxes fed on uncooked fish; notes on trapping results and ectoparasites of snowshoe hares; immunity studies of rabbits in relation to tularemia; and autopsies of 12 snowshoe hares and 1 ruffed grouse.

Disease: Lead poisoning, etc.

Green, R. G., and J. E. Shillinger. Minnesota Wildlife Disease Investigation (obtainable from Dr. J. E. Shillinger, Biological Survey, Washington, D. C.), Feb. 1936, pp. 113-125, mimeographed.

Report by Green and Ralph L. Dowdell on "Disintegration of Lead-magnesium Alloy in the gizzards of ducks". Finding: "The minimum magnesium content for a disintegrable lead alloy lies between 1.5 and 2.0 percent magnesium." Counts of snowshoe hares in St. Louis County, Minnesota, indicated a marked decrease in the population from Nov. 1, 1935, to Jan. 9, 1936. Results are presented of autopsies on 22 specimens from that area, also on 14 hares and rabbits from the Lake Alexander area, and 10 miscellaneous mammals and birds. In discussing a parasite of ticks, the fact is noted that the parasite infests only immature ticks.

Disease: Parasites (external) of birds

Peters, Harold S. A list of external parasites from birds of the eastern part of the United States, Bird Banding (95 South St., Boston, Mass., 50 cents a copy), 7(1), Jan. 1936, pp. 9-27.

198 species of lice, flies, ticks, and mites recorded from 255 species and subspecies of birds. A list of the parasites is given for each bird; they number 15 for the bobwhite for instance. Known distribution by States is indicated.

Disease: Of owls

Green, R. G., and J. E. Shillinger. A virus disease of owls, Amer. Journ. Pathology (818 Harrison Ave., Boston, Mass.), 12(3), May 1936, pp. 405-410, Pl. 47.

"A virus disease has been recognized as a natural disease in the great horned owl x x x The infection has been transmitted experimentally to the same species and to the screech owl x x x but not to the barred owl. The disease is characterized by the formation of multiple abscesses in the liver, and less consistently, in the spleen" (p. 410).

Ecology: Forest type in relation to deer

Leopold, Aldo. Deer and Dauerwald in Germany. I. History, Journ. Forestry (Mills Bldg., Washington, D. C., 65 cents a copy), 34(4), April 1936, pp. 366-375, figs. 1-5 (graphs).

German forests are overstocked with deer. "The situation flatly contradicts the uncritical assumption, dying but not yet dead in America, that the practice of forestry in and of itself, regardless of what kind or how much, promotes the welfare of wildlife." Sketch of the rise and fall of game populations in relation to historical events and forest practices. After a period (1810-1914) of spruce mania, good for neither forestry or game production, there finally came definite national recognition of the superiority of mixed forest, beginning in 1918.

Ecology: Population control

McAtee, W. L. The Malthusian principle in Nature, Sci. Monthly (Lancaster, Pa., 50 cents a copy), May 1936, pp. 444-456.

The Malthusian principles, "population is necessarily limited by the means of subsistence", and "population always increases where the means of subsistence increase", do not normally function in nature. Discussion of space restriction on populations, illustrated in part by game bird numbers; self-limiting tendencies in organic populations; and theoretical considerations.

Ecology: Population studies

Smith, Harry S. The role of biotic factors in the determination of population densities, Journ. Economic Entomology (450 Ahnaip St., Menasha, Wis., 75 cents a copy), 28(6), Dec. 1935, pp. 873-898, figs. 126-130 (graphs), 1 table.

Based on entomological experience, yet of general application to population studies. The main point made is that of factors regulating populations, the most important are those dependent on, rather than those independent of, density. Bibliography of 16 titles.

Ecology: Swamp values

Agersborg, H. P. K. The nature of swamps. When, if ever, should they be drowned or drained?, American Wildlife (Investment Bldg., Washington, D. C., 25 cents a copy), 24(6), Nov.-Dec. 1935, p. 88.

Swamps often have a highly characteristic flora and fauna, to the continued existence of which their conservation is necessary. Suggestions for eliminating mosquito breeding without destroying the swamps; lead arsenate sprays should not be used. The swamp has a unique economic value and a definite place in the scheme of balanced nature, especially in promoting diversification of habitat.

Ecology: Rainfall in relation to bobwhite crop

Gorstell, Richard C. Precipitation in relation to game crops, American Wildlife (Investment Bldg., Washington, D. C., 25 cents a copy), 25(2), March-April 1936, pp. 22, 26-28, 1 graph, 1 photo.

Contrary to popular belief, eleven years' records of the quail kill in Pennsylvania show that when the breeding season precipitation was above the mean the quail kill was above the mean and vice versa. Suggested reason is variation in proportion to rainfall of the food supply for young quail.

Ecology: Range management

Darling, J. N. The jokers in western grazing, Successful Farming (Meredith Publishing Co., 1714 Locust St., Des Moines, Iowa, 5 cents a copy), April 1936, pp. 9, 22, 47-49, 4 photos.

Vivisection of the Taylor Grazing Act. "In a day when the farmers of fertile, well-watered areas are asked to cut down production of wheat, corn, cotton, tobacco, and other crops, it just doesn't make sense for Uncle Sam to give free or extremely cheap grazing privileges in the arid or semi-arid regions." "It would seem perfectly evident that the Department of Agriculture should control all policies related to land use." Exploitation of the

range is "making it almost impossible for wild life to exist. x x x [various forms] are on the way to extinction because of the disappearance of feed, water, and cover. It would be far better for everybody concerned, in the long run, to dedicate the public domain to wildlife."

Food Habits: Fur-seal

Anon. Food of fur seals, U. S. Fisheries Service Bul. (U. S. Dept. Commerce, Washington, D. C.) 252, May 1936, p. 6.

Thirty-nine stomachs examined by the Biological Survey contained no salmon and of 593 reported on by Canadian authorities, only 7 percent held salmon. The principal food is herring but squids and crustaceans also are taken. The fur seal is not a menace to salmon and halibut fisheries.

Food Habits: Mallard

Munro, J. M. Food of the common mallard in the lower Fraser Valley, British Columbia, The Condor (W. Lee Chambers, 2068 Escarpa Drive, Eagle Rock, Calif., 50 cents a copy), 38(3), May-June 1936, pp. 109-111.

Report on 90 stomach contents, of which 21 contained 90 to 100 percent fragments of grass leaves, and 27, 90 to 100 percent wild oats. Food items most frequently identified were wild oat, smartweed, bur-reed, and pondweed.

Food Habits: Mink

Hamilton, W. J., Jr. Food habits of the mink in New York, Journ. Mammalogy (Wm. H. Burt, University of Michigan, Ann Arbor, Mich., $1.00 a copy), 17(2), May 1936, p. 169.

Report on analyses of food contents of 70 viscera; frequency indices of leading items of food are: Mice 32.94, fish 18.82, crayfish 16.47, and muskrat 14.12. The results agree well with those of Dearborn for Michigan (Bul. 1, School of Forestry and Conservation, Ann Arbor, Mich., 1932).

Food Habits: Mule deer

Robinson, Cyril S. A study of plants eaten by deer on the Santa Barbara National Forest (U. S. Forest Service, Santa Barbara, Calif.), 1935, 8 pp., mimeographed.

California mule deer. "It is the opinion of the author that deer are primarily browsing animals, and that the best yearlong deer range should be composed of approximately 60 percent browse or shrubs, 25-30 percent weeds and herbs, and 10-15 percent grasses and grasslike plants." Palatability ratings and notes on utilization are given for long lists of plants in all of these categories. Brief mention is made of the use also of mistletoe, mosses, and fungi. Plants with the highest palatability ratings in the principal groups are: Browse, blue elderberry (Sambucus glauca) 80, and bitterbrush (Purshia glandulosa) and redberry (Rhamnus crocea) each 70; weeds and herbs,

filaree (Erodium cicutarium) and bur-clover (Medicago hispida) each 90; alfalfa (Medicago sativa) and clover (Trifolium spp.) each 80; grasses and grasslike plants, bluegrass (Poa pratensis), sedge (Carex spp.), and rush (Juncus spp.) each 50. A valuable contribution.

Food Habits: Pheasant

Dalke, Paul D. Economic status of the pheasant and the relation of farming practices in southern Michigan thereto, American Wildlife (Investment Bldg., Washington, D. C., 25 cents a copy), 24(6), Nov.-Dec., 1935, pp. 86, 94, 2 photos.

Results of analysis of 353 crops summarized; differences in feeding habits of the young and adults discussed; estimate in pounds of various kinds of food consumed by 100 pheasants on the average section of land in the general farming region of Michigan. Grain, the chief reliance of the bird, is mostly waste. Grain stubble fields are the most important source of winter food. The total proportion of insect food is not great but the pheasant's capacity for destroying insects is great. The burning of fencerows eliminates valuable late winter foods and the burning of marshes in spring destroys nests.

Food Habits: Snowshoe hare

Aldous, C. M. Food habits of Lepus americanus phaeonotus, Journ. Mammalogy (Wm. H. Burt, University of Michigan, Ann Arbor, Mich., $1.00 a copy), 17(2), May 1936, pp. 175-176.

Report on 54 Minnesota stomachs studied by the Biological Survey. One contained traces of insects, but the food of the whole number was practically 100 percent vegetable. Stomachs collected in winter and spring contained chiefly woody plants as aspen, willow, and birch; those taken in summer were mainly strawberry and Antennaria; and those in fall largely grasses. Other details are given.

Food Habits: Snowshoe hare damage and its control

Anon. Rabbits cause great losses to plantations in brushy areas, Lake States Forest Experiment Station (St. Paul, Minn.) Technical Notes, No. 116, May 1936, 1 p., mimeographed.

Snowshoe hares caused loss of 16 percent of seedling jack pines on areas where brush cover was cut, and of 56 percent where it was not; corresponding figures for Norway pine are 22 and 34 percent, respectively. "It is thus evident that plantations cannot successfully be made in brushy areas in times of high rabbit population, unless some provision is made to protect them from these animals. One method of protection is to change the cover conditions."

Life Histories: Bobwhite population fluctuations

Kennedy, I. N. Fluctuations in bobwhite quail populations in the South, Outdoor Florida (1306 Grand Central Ave., Tampa, Fla., 10 cents a copy), 1(2), March 1936, pp. 10-11, 17, 3 photos.

A compilation of views expressed in letters and in print by a number of persons including Herbert L. Stoddard and Charles O. Handley. The fluctuations are not known to be periodic but are due largely to meteorological extremes. Long time diminution in numbers traced to decline of agriculture and the hope expressed that the present back-to-the-land movement will have a favorable effect upon the quail population.

The following quotation from Handley bears interestingly upon a burning question: "The expenditure in Virginia of $348,325 for the taking of 695,653 hawks, owls and crows, over the six years period, 1924-1929, may have saved some quail, but I am of the opinion that had the same amount of money been spent on lespedeza seed for distribution more would have been accomplished. Furthermore, since the paying of bounties has been stopped quail have continued to increase and are now more abundant than at any time when bounties were paid."

Life Histories: Grouse, Sharp-tailed

Grange, Wallace. The interesting sharp-tailed grouse, Game Breeder and Sportsman (205 E. 42nd St., New York, N. Y., 20 cents a copy), 40(4), April 1936, pp. 82-83.

Notes on mating behavior, character of range, food habits, and nomadism.

Life Histories: Pheasant nesting

Hamerstrom, Frederick N., Jr. A study of the nesting habits of the ring-necked pheasant in northwest Iowa, Iowa State College Journ. Sci. (Ames, Iowa), 10(2), 1936, pp. 173-203, 2 pls., 4 figs., 8 tables.

A careful study carried on during three breeding seasons (1933 to 1935) and covering 503 nests. Occurrence and fate of nests is discussed and tabulated according to types of cover; in most cases correlation was not pronounced. A preference was shown for nesting in edge zones, possibly proportional to the size of the block of cover. The average number of eggs in clutches varied from 10.1 to 12.4 in different years; for the three seasons the average was 11.2, the range 4 to 26. A decline in the number of eggs per clutch with the advance of the nesting season was observed. Fertility varied little, averaging 93.1 percent; viability showed greater variability. On the basis of 445 nests under regular observation, 76.9 percent were unsuccessful. Causes of failure: Man 52.3 percent; predators 19.3; abandonment 3.5; flooding 5.8; total lack of cover 0.9; and unexplained 18.1 percent. Again it is proved that it will pay man more to regulate his own actions than to concentrate on "vermin control".

Life Histories: Sex resistance to starvation

Errington, Paul L. Sex and resistance of bobwhites and ring-necked pheasants to starvation, The Auk (3200 22nd St. N., Arlington, Va., $1.00 a copy), 53(1), Jan. 1936, pp. 78-79.

The sexes of bobwhite average about the same in weight and resist starvation about equally. Males of ringneck pheasants are much heavier than females and under starvation do not lose weight as rapidly.

Life Histories: Winter survival of bobwhite

Errington, Paul L. The winter of 1934-35 and Iowa bob-whites, The American Midland Naturalist (University Press, Notre Dame, Ind. Issued irregularly and at varying prices), 17(2), March 1936, pp. 554-568.

Results of field study through the winter of bobwhite populations in Iowa and Wisconsin, particularly as to known or suspected causes of fluctuations. Most of the disappearances of coveys did not represent mortality, although mortality may have occurred after local migration. Again it is reported that "severity of bob-white winter losses from predators seems not to be correlated with the kinds and numbers of resident predators."

Management: Big game

MacDonald, H. H. Big game management, (Biological Cine, Dallas, Texas; present address of both publisher and author unknown), 183 pp. (3-1/2 x 7), illus., 1934.

A book written strictly from the hunter's point of view which, as developed, seems equally remote from those of the stockman and the "ultra-conservationist". In the Introduction, it is asserted that the results of big game conservation efforts in western grazing States in the past ten years have proved exceedingly discouraging. "In every degree of the grazing use of the ranges x x x there is damage to game animals on private, State, and Federal lands."

In Chapter 1, Land utilization and wildlife, the author defends the premise that big game was crowded by man and his domestic animals from the low ranges into the mountains. He adduces some support of this position, which if maintained, would invalidate deductions as to life zones so far as based on big game species. The Forest Service is criticized for allowing grazing policies to develop detrimentally to big game. "To what extent this recreational resource is permitted to develop and use these National Forest ranges will depend upon the influence of public opinion in opposition to the existing degree of the livestock grazing use, as dictated by sheep and cattle interests." (p. 13.)

Even so, the National Park Service is said to be worse for "with hunting permitted on the National Forests, state and private lands, there is

better conservation and management of the native fauna: game animals, predators, and others, than exists on the National Park areas." (p. 16.) Later the Biological Survey comes in for like attention relative to predatory animal control.

Some of the points made in summing up his chapter on land utilization are: "the conservation and development of wildlife resources is dependent upon the control and regulation of all land uses and policies conflictional to wildlife," all critical watersheds on the National Forests should be withdrawn from grazing use; "That all forms of wildlife and their range needs be given higher priority than livestock on the National Forests"; "That all overgrazed ranges on the National Forests be immediately closed to livestock"; "That all western National Forests having the highest values in wildlife, recreational, and natural wealth, be permanently closed to livestock and x x x administered in the special interests of wildlife and recreation"; "That the National Park lands be subject to a constructive wildlife policy and state regulations of proper seasons and removals x x x That predators, particularly coyotes, in all Parks, be reduced in density. That hunting be permitted on Park areas that have only National Forest values."

In connection with the enumeration of expenditures of sportsmen in a California game unit, the statement is made that "harvesting of the annual deer crop has a potential value of $100 per head." While estimates are made of the value of hunter travel, the author says, "it is impossible to place a monetary value on the privilege of viewing wildlife." (p. 30.) Other authorities do not agree as they believe the attractiveness of wildlife is a prime consideration in the choice of travel routes by tourists; they point out, moreover that the tourist season may be as much as 6 months while the hunting rarely exceeds 2, and often is much shorter. Data are presented (pp. 34-36) to show that money receipts from hunting may greatly exceed those from grazing. The advisability of wildlife management is urged and the importance of professionally trained widllife managers stressed. "Ultra-conservationists" come in for some hard knocks (pp. 38-39), a symptom of the lack of understanding of the hunters for that group and vice versa.

"Action should be taken to increase the game present to the full capacity of the ranges." (p. 42.) This suggestion should be qualified to the effect that the condition of the range at its worst, or during emergencies, should be given great weight, as it is the ultimate regulating factor. The appended suggestion "to make hunting grounds more accessible by construction of roads and trails" relates to an activity that in the view of many is already overdone.

The author argues mostly against refuges, especially large ones, and points out that "all areas are game preserves during the closed season." Big game management in his opinion should substitute regulated and directed hunting for refuges. In an ideal world this might be the solution, but in the face of poaching and other law violations so prevalent now, the superior practicability is evident of controlling irregularities on a definite refuge area rather than over the game range in general. It is pointed out that on

certain so-called refuges on the National Forests refuge values have been greatly diminished by livestock grazing within their boundaries. Adequate allotment of forage is of equal importance to conservation of wildlife and in fact should receive prior attention.

Useful browse and herbage lists based apparently on California data are presented on pages 74-76. With regard to mortality on certain overstocked areas, the author remarks: "These Kaibab losses, as well as other western game losses, can be largely attributed to stock grazing on the forage supply needed as supplementary range to winter game ranges." (p. 85.) "In order to maintain the productivity of the choice forage plants it is necessary that they be not damaged by a too-heavy use. This use should not exceed 60 to 70% and result in leaving 25 to 30% of the forage on the plants at the end of the growing season. The Forest Service permits livestock use up to 10 to 15%; this does not protect the choice species on the range or allow for them to continuously reproduce or even produce an abundance of leafage. That is the reason why the plants which should grow upright become stunted, spread out over the ground and produce less forage each year. As before stated, livestock are taken off the high ranges and taken to areas where the winter forage has been protected for fall use, such as spring-fall range. The forage on this range is then grazed heavily; then the stock are moved to further lower elevations or fed on ranches. The deer then drift onto the low ranges that have been just previously heavily used by the stock and are thus exposed to forage conditions that oftentimes do not even leave 10% of the leafage on the plants for the game survival." (pp. 121-22.) "All experiences and natural laws point that game animals and livestock cannot occupy the same range units to the full welfare of each group." (p. 141.) The livestock industry desires full use, hence requests elimination of forage-consuming wildlife. Much of this is the normal food of coyotes and other predators. These are then forced to turn to game which stimulates hunters to add their voice to the demand for predator control. "If the stockman had been willing to accept his losses to coyotes - which would have been negligible were the ranges properly grazed and reasonable numbers of grazing rodents permitted to live and provide coyote food - with as much indifference as he does those losses due to overstocking of the ranges, poisonous plants, drought, exposure, etc., nature would have been much more kind to him by conserving his range forage far better than his rodent control could do. As one of many examples, because of poisoning and trapping coyotes on southwest ranges, jack-rabbits have increased to the extent that their density and grazing of the grasses makes exactly the difference in forage utilization between normally stocked range and overgrazed range and that this combined use is causing the range to be further reduced by succession of valueless plants for both stock and rabbits, such as mesquite and prickly-pear. Present indications, as voiced by Arizona stockmen, are that coyote annihilation is not so desirable after all. To game management, this will also indicate the insecurity, lack of soundness and the strictly monetary trend of the stockman's predator control policy." (pp. 143-44.)

A work difficult to abstract, full of meat, but also dogmatic on controversial questions, and prejudiced, as never departing from the thesis that maximum production of game for hunting is the highest use for western ranges.

Management: Bobwhite in Iowa

Errington, Paul L. Iowa experiments with quail, Outdoor America (1167 Merchandise Mart, Chicago, Ill., 10 cents a copy), N.S. 1(7), May 1936, pp. 4-5, 16, 3 photos.

In Iowa the bobwhite, originally restricted in distribution, increased with crude, decreased with 'slick and clean' farming. Experience in the State indicates that "the problem of wise administration of the bobwhite is not only one of keeping the species from being shot out but one of keeping it from being farmed out, starved out, or otherwise endangered indirectly" and that administration "may be expected to fail or succeed according to its failure or success in handling MAN." Shooting within reasonable bounds is feasible and a take of around 50 percent permissible, preferably to be shot early in the season. A system of small inviolate refuges alternating with tracts of shooting ground is recommended as an automatic device to prevent over-shooting. Notes also on farmer-sportsman relationships, and value of erosion control to bobwhite and other small wildlife.

Management: Burning

Greene, S. W. Effect of annual grass fires on organic matter and other constituents of virgin longleaf pine soils, Journ. Agr. Research (Supt. of Documents, Washington, D. C., 15 cents a copy), 50(10), May 1935, pp. 809-822, 6 tables.

Another of Greene's interesting and valuable contributions on this subject. Organic matter in the soil depends on plant structures under the surface far more than on any mulch there may be on top of the soil. The agricultural practice of plowing under vegetation has no effective counterpart in nature, although anti-burning propaganda seems to be inspired by assumption that it has. Studies carried on for 8 years in southern Mississippi showed that there is 1.6 times as much organic matter in soils burned over every year as in the soils protected from fire. The burned-over soils also contained 1.5 times as much nitrogen as the unburned. Forage growth on ungrazed but burned areas was more than double that on unburned plots, and the crude-protein content of the principal forage grasses was higher. There was a great increase of native legumes on the burned land, the difference expressed in plants per acre being 27,600 on plots both grazed and unburned and 41,500 on those ungrazed and burned.

Copies of previously published articles "The Forest that Fire Made," 1931, and "Burning the Woods", may be obtained from Mr. Greene, McNeill, Miss., as long as the supply lasts.

Management: Cover improvement

Morton, James N. A game restoration job for everyone, Pennsylvania Game News (Board of Game Commissioners, Harrisburg, Pa., 5 cents a copy), 7(2), May 1936, pp. 4-7, 24, numerous figs.

Illustrated suggestions as to improving refuge cover, use of flushing bar, preservation of nesting islands, and other essential cover.

Management: Deer requirements

Ehrhart, E. O. Forest management and deer requirements on the Allegheny National Forest, Journ. Forestry (Mills Bldg., Washington, D. C., 65 cents a copy), 34(5), May 1936, pp. 472-474.

With reference to the suggestion of rotation cutting in the smallest practicable blocks by Gabrielson (Journ. Forestry, Feb. 1936, see Wildlife Review 3, April 1936, p. 25, and the present issue, p. 15), the author believes that "such a plan would not produce a maximum of food supply where and when it is most needed." Winter is when food limitations operate most decisively and winter range needs special attention. In the Allegheny National Forest this range is in valley bottoms where concentrated feeding tends to make openings in the stand providing opportunity for new growth. Deer are closely localized in winter feeding areas and are not likely to proceed to others even if better supplied. New growth following cutting, except in valleys, therefore, is unavailable. Frequent selective cuttings in valleys is the author's recipe for maintaining winter deer browse on the Allegheny National Forest.

Management: Farmer-sportsman relationships

Creveling, J. Q. How the account stands, Pennsylvania Game News (Board of Game Commissioners, Harrisburg, Pa., 5 cents a copy), 7(2), May 1936, pp. 8-9, 3 photos.

The farmer-sportsman relationship from the hunter's point of view; thinks the farmer sufficiently compensated now by protection of insectivorous birds and fur animals, by bounties on predators, and personal hunting opportunities.

Management: Farmer-sportsman relationships

Titus, Harold. Confessions of an ex-commissioner, The Sportsman (10 Ferry St., Concord, N. H., 50 cents a copy), 19(4), April 1936, pp. 34-35, 60.

"Once upon a time I knew all the answers. x x x Now x x x my humility in the face of the identical problems is matched only by my earlier arrogance." Discussion that should do good by a real sportsman, noted writer, and member of the Michigan Conservation Commission for 8 years. He stresses lack of basic knowledge, need for research, necessity of sportsmen realizing

that fish- and game-cropping must be brought to an engineered basis. Propagation, restocking, providing public shooting grounds, in fact any and all, State action cannot satisfy demands of an annually increasing hunting and fishing army. In effect game and fish are under control of landholders and the only hope of a permanently working arrangement is cash return to the landowner. The author predicts that the system of paying for hunting rights will be accepted "grudgingly at first, but finally with enthusiasm."

Management: Forest game

Chapman, Herman H. Forestry and game management, Journ. Forestry (Mills Bldg., Washington, D. C., 65 cents a copy), 34(2), Feb. 1936, pp. 104-106.

Abstracted as BS Leaflet 33, in Wildlife Review, 3, April 1936, p. 24.

Management: Forest game

Gabrielson, Ira N. The correlation of forestry and wildlife management, Journ. Forestry (Mills Bldg., Washington, D. C., 65 cents a copy), 34(2), Feb. 1936, pp. 98-103.

Abstracted as BS Leaflet 37, in Wildlife Review, 3, April 1936, p. 25.

Management: Harvesting

Chapman, Floyd B. Report on State hunting preserves, 1935, Ohio Division of Conservation (Columbus, Ohio), Bul. 97, 9 pp., 1936, mimeographed

Report on results of the first opening of 3 State preserves to hunting. Hunters were checked in and out, their game examined, and observations recorded. On one of the preserves, of 3,333 squirrels seen, 2,018 were killed. The cost to the hunter per squirrel was not less than $1.37 and all incidentals figured in may have been as much as $5.00. Data are given on weights of squirrels (average 17 ounces), representation of sexes (about even), and infestation by fly larvae (warbles). Somewhat similar data are given for rabbits, and in addition a tabulation of all wildlife seen by the hunters.

Management: Harvesting deer

Trippensee, R. E. Cooperative deer hunting. Control of wildlife harvest imperative to good management, American Wildlife (Investment Bldg., Washington, D. C., 25 cents a copy), 24(6), Nov.-Dec. 1935, pp. 87, 92-93, 2 photos.

Cooperative deer hunting, supervised and checked, an effort to make deer hunting in National Forests a safer and better sport. Statistics are given for the 1934 season in 8 Forests in Minnesota, Wisconsin, and Michigan. They show the number of hunters, the head of deer killed, the proportion of

successful hunters, and the acreage to each deer harvested, and to each hunter. Where the hunters were the most scattered, there was a greater possibility of each getting a deer.

Management: Illinois plans

Frison, T. H. The Illinois Natural History Survey - its relation to conservation, Illinois Conservation (Dept. of Conservation, Springfield, Ill.), 1(2), 1936, pp. 4-5.

Brief statement of the history and organization of the Survey, and its program with respect to wildlife management and aquatic biology.

Management: Illinois plans

Murdoch, Earl C. Soil Conservation Service inaugurates wildlife management program, Illinois Conservation (Dept. of Conservation, Springfield, Ill.), 1(2), 1936, p. 3.

Plans for the work in Illinois especially with reference to improvement of cover and provision of feed patches.

Management: Multiple use of forest land

Gordon, George B. Forests, land, and water, Journ. Forestry (Mills Bldg., Washington, D. C., 65 cents a copy), 33(11), Nov. 1935, pp. 896-899.

A plea for the development of fish, game, and other recreational resources of forested areas. "The writer is certain that once we foresters have demonstrated that we can not only grow forests, but use land and water as well, our future as a profession will be secure. The owner of wild lands must and will have ann ual returns from his properties. Let us help him to produce trout and salmon, grouse and deer, as well as timber."

Management: Planting mountain-ash

Anon. Propagation of mountain ash, Forest Research Digest (Lake States Forest Expt. Sta., St. Paul, Minn.), March-April 1936, pp. 13-14, multilithed.

Brief report on German tests with Sorbus aucuparia, probably applicable to Sorbus americana. Fall sowing of cleaned seed is recommended.

Management: Permissible shooting

Errington, Paul L. Shooting and bobwhite populations, Game Breeder and Sportsman (205 E. 42nd St., New York, N. Y., 20 cents a copy), 40(4), April 1936, pp. 79, 91-93, 1 photo.

As a result of Wisconsin and Iowa studies, it was "found that if the wintering population exceeded the carrying capacity of the land, the surplus birds either had to get out or they would be killed by predators. x x x If bobwhites are to be managed for sporting purposes, the one effective method of preventing the loss of the surplus through winter predation is to harvest it first." These statements, out of their context, may seem rather dogmatic but they are properly cushioned by references to quality of data, and to technical difficulties in enumerating quail populations, as well as by advice against going too far with shooting under the stimulus of comforting advice without constantly checking back to the actual facts as to the bobwhite population involved.

Management: Range rehabilitation

Vorhies, Charles T. Wildlife aspects of range rehabilitation, Hoofs and Horns (121 E. 10th St., Tucson, Ariz., 10 cents a copy), 5(8), Jan. 1936, pp. 6-7, and 5(9), Feb. 1936, pp. 10-11.

Rodents unduly blamed for erosion, not as destructive as alleged and expenditure for their control for that reason and also as forage consumers out of proportion to the value of the work; figures are given. Extirpation of beaver by trappers a prime factor in causing destructive erosion. Revegetation of range will be beneficial to wildlife "only to the extent that domesticated stock is not increased to again consume the additional forage and destroy the added cover". Reduction of livestock is the most important thing that might be done to restore the range.

Management: Small upland refuges

Gordon, Seth. New small game program launched, Pennsylvania Game News (Board of Game Commissioners, Harrisburg, Pa., 5 cents a copy), 7(2), May 1936, pp. 2-3, 13, 2 figs.

Proposal to secure benefits similar to those resulting from large refuges in forested regions by creating small refuges in agricultural districts, a plan, the success of which is yet to be demonstrated. Notes on the system of deer refuges and public shooting grounds, and the worth of small forest refuges to wild turkeys, ruffed grouse, and squirrels. Doubts expressed as to the value of distribution of imported rabbits.

Management: Trail cutting in relation to deer

Robinson, Cyril S. Truck trails and firebreaks; their use by deer on the Santa Barbara National Forest, Journ. Forestry (Mills Bldg., Washington, D. C., 65 cents a copy), 33(11), Nov. 1935, pp. 940-942.

Deer are not driven out by trail invasion of their habitat. The change in ecological conditions produces a new mixed growth of which the deer are quick to take advantage. Notes on utilization of 5 browse species.

Management: Wildlife in land planning

Preston, John F., Chairman. Alleghany Section Committee Report on Land Policy, Journ. Forestry (Mills Bldg., Washington, D. C., 65 cents a copy), 34(5), May 1936, pp. 503-505.

"Mountain forests and recreation and wildlife areas constitute the principal classes of land where public ownership can hardly be questioned." Wise use "is any method of treatment which keeps such lands productive of the product to which they are chiefly suited or for which they have been set apart, whether it be timber, wildlife, recreation, or scenery." Why not all uses so far as they can be harmonized?

Management: Wildlife inventories

Hosley, N. W., Chairman. Forest wildlife census methods applicable to New England conditions, Journ. Forestry (Mills Bldg., Washington, D.C., 65 cents a copy), 34(5), May 1936, pp. 467-471.

Importance of inventory of stock in wildlife management. Suggestions as to methods of counting deer and ruffed grouse with briefer reference to other groups. Bibiliography of 9 titles.

Propagation: Cottontail rabbit

Dunn, Malcolm. Propagating cottontail rabbits, Modern Game Breeding and Hunting Club News (J. A. Gardy Printing Co., 28 W. State St., Doylestown, Pa., 25 cents a copy), 6(4), April 1936, p. 7.

In an initial test with 7 does and 2 bucks on an acre of ground there was an increase of 75 young rabbits. Later and more extensive efforts as usual in game propagation brought diminishing returns. Experience (details given) taught desirable practices in penning and feeding and the work will be continued.

Propagation: Distribution of game birds

Bade, August. California system of game bird propagation and distribution, Game Breeder and Sportsman (205 E. 42nd St., New York, N. Y., 20 cents a copy), 40(4), April 1936, pp. 75-76, 2 photos.

"The California system as it stands today consists of artificially produced birds - disease free and hardy; holding pens, constructed according to our specifications, but paid for and owned by the sportsmen, for the distribution of game birds, and closed areas, made possible by the cooperation of land owners, in which to plant birds where they will have food, water, and protection." The birds are sent to the pens at 30 days and held about 7 weeks before liberation. The system has greatly increased the capacity of the State rearing system for game bird distribution and has reduced the cost. Significant sentence: "about 90 percent of all land owners are more than willing to have their land included in a closed area."

Propagation: Irradiation results

Bissonnette, T. Hume, and Albert G. Csech. Eggs by pheasants and quail induced by night-lighting, Science (Lancaster, Pa., 15 cents a copy), 83, April 24, 1936, p. 392.

Application to pheasants and quail of Bissonnette's earlier (1933) findings from starlings; birds brought into full egg production in January.

Propagation: Irradiation results

Clark, Leonard B., Samuel L. Leonard, and Gardiner Bump. Light and reproduction in game birds, Science (Lancaster, Pa., 15 cents a copy), 83, March 13, 1936, p. 268.

Grouse, quail, and pheasants were irradiated daily for 6 hours after sunset for one month. The results "show that light has a profound stimulating effect upon the reproductive organs".

Propagation: Pheasant

Clausen, George C. Caring for pheasants before and during the breeding season, Modern Game Breeding and Hunting Club News (J. A. Gardy Printing Co., 28 W. State St., Doylestown, Pa., 25 cents a copy), 6(3), March 1936, pp. 7-8.

A large number of suggestions about minor as well as major points in pheasant rearing gleaned from a successful breeder's experience. This article symbolizes a change in the game bird rearing business; formerly such individually acquired knacks were kept as secret as possible.

Propagation: Pheasant; artificial incubation and brooding

Anon. Artificial incubation and brooding of ringneck pheasants, Pennsylvania Board of Game Commissioners (Harrisburg, Pa.), 1936, 12 pp., 5 pls., mimeographed.

Description of the use of a combined forced draft and still air incubating system by the State game farms. Brooder house construction and use. Handling and feeding chicks. Formulas for a rearing mash and scratch food.

Propagation: Pheasant, care of young

Clausen, George C. Feeding pheasant poults, Modern Game Breeding and Hunting Club News (J. A. Gardy Printing Co., 28 W. State St., Doylestown, Pa., 25 cents a copy), 6(4), April 1936, pp. 6-7.

Warmth and quiet prime necessities for the first 48 hours. In feeding commercial mashes replace the long used egg food and custard. Suggestions as to changes in diet corresponding to age. Care of the young birds on the rearing field, and also of breeding stock, especially during the moult.

Propagation: Pheasants, Fancy

Denley, Charles F. Ornamental pheasants, their breeding and care, 93 pp., 11 half-tones, 1 line cut. 1935. (Apparently obtainable from the author, Glenmont, Md., also from Modern Game Breeding and Hunting Club News, 28 W. State St., Doylestown, Pa. $2.50 a copy.)

Account of the author's methods developed in 33 years' experience. Shelter, runs, feeding, watering, choice of stock, breeding, care of eggs, use of foster mothers, care of young, diseases and maladies and their treatment. Special chapters on peacock and impeyan pheasants and on peafowl. Bibliography of 16 titles.

Propagation: Pheasant; hen system

Anon. Hatching and rearing ringneck pheasants, Pennsylvania Board of of Game Commissioners (Harrisburg, Pa.), 1936, 16 pp., 6 pls., mimeographed.

Instructions primarily for those receiving eggs from the State Game Farm, as to care of eggs, and broody hens, construction and care of sitting boxes and rearing coops, and feeding the chicks.

WILDLIFE RESEARCH AND MANAGEMENT LEAFLETS

Issues of interest to wildlife managers additional to those previously mentioned are listed below. Copies of these mimeographed leaflets can be obtained from the Biological Survey, U. S. Department of Agriculture, Washington, D. C.

BS-41 to BS-50. Fruits attractive to birds, by W. L. McAtee, April 1936..

Each of these ten leaflets contains a brief general discussion of the region to which it pertains, a map outlining the regions adopted, a table listing genera of fleshy fruits most attractive to birds throughout the United States, and a brief bibliography of chiefly recent publications on the native and cultivated trees and shrubs. Each leaflet contains lists of native species of the favored fruit-bearing genera with notes on the fruiting season, and in most cases also lists of extralimital fruits that have been recommended as a result of trial by the Agricultural Experiment Stations and other agencies.

Definition of the region treated and information as to pages, etc., are herewith given in connection with the serial numbers of these 10 leaflets.

BS-41. Region No. 1 - Northwestern States [Washington, Oregon, and Idaho]. 14 pp., 10 tables, 1 map.

BS-42. Region No. 2 - Rocky Mountain States [Montana, Wyoming, and Colorado]. 12 pp., 8 tables, 1 map.

BS-43. Region No. 3 - Northern Plains States [North Dakota, South Dakota, Nebraska, and Kansas]. 13 pp., 7 tables, 1 map.

BS-44. Region No. 4 - Northeastern States [Minnesota, Wisconsin, Michigan, New York, Vermont, New Hampshire, Maine, Massachusetts, Connecticut, Rhode Island, Iowa, Illinois, Indiana, Ohio, Pennsylvania, New Jersey, West Virginia, Maryland, Delaware, Missouri, Kentucky, and Virginia]. 26 pp., 18 tables, 1 map.

BS-45. Region No. 5 - California. 14 pp., 5 tables, 1 map.

BS-46. Region No. 6 - Great Basin States [Utah and Nevada]. 9 pp., 4 tables, 1 map.

BS-47. Region No. 7 - Southwestern States [Arizona and New Mexico]. 10 pp., 5 tables, 1 map.

BS-48. Region No. 8 - Southern Plains States [Texas and Oklahoma]. 12 pp., 7 tables, 1 map.

BS-49. Region No. 9 - Southeastern States [Arkansas, Tennessee, North Carolina, Louisiana, Mississippi, Alabama, Georgia, and South Carolina]. 12 pp., 3 tables, 1 map.

BS-50. Region No. 10 - Florida. 13 pp. 4 tables, 2 maps.

BS-51. Local control of magpies, by E. R. Kalmbach, April 1936, 8 pp., 1 pl.

Economic status of the magpie; need of local control; destroying eggs and young; trapping; poisoning. A trap, suet stick, and suet block illustrated.

BS-53. Bird banding, April 1936, 5 pp.

Brief history of the movement; qualifications of cooperators, including permits; discussion of possible harm to birds; description of bands and their use; notes on traps and on value of the work.

BS-57. Marking wild animals for identification, by Frank G. Ashbrook, May 1936, 3 pp., 1 fig.

Tattooing and tagging ears; toe clipping; addresses of dealers in electric tattoo instruments, tattoo punches, and ear tags.

SPECIAL ARTICLES

The articles in this issue are contributed by the organizations to which they refer. That in Wildlife Review No. 3 (April 1936, pages 27-30) was expanded by the Editor from a statement furnished by Dr. A. J. Pieters of the Division of Forage Crops and Diseases.

Wildlife management of the National Park Service

The wildlife policy of the National Park Service aims to perpetuate all native wildlife forms, whether game or non-game, under natural conditions. Each species is left to carry on its struggle for existence unaided, as being to its ultimate greatest good, unless there is real cause to believe that it will perish if unassisted. Conservationists have come to depend on the National Park Service, together with the other Government agencies, to protect the prized remnants of our almost vanished large mammals and animals intolerant of the advances of civilization. Section I of the Act of August 25, 1916, to establish a National Park Service states, in part, that the purpose of national parks, monuments, and reservations is to "conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

Considering the joint use of parks by animals and man, one gets some conception of the complexity of the national park wildlife problem. As practiced by the National Park Service, wildlife management consists in the maintenance, so far as possible, of primitive faunal conditions in areas where the annual human attendance is steadily mounting. Since wildlife of the wilderness is affected by human use of the park areas, which are frequently inadequate biological units, such management is necessary in order that some of the rarer species, such as the wolverine and trumpeter swan, do not disappear altogether, and that other more adaptable species do not increase beyond the carrying capacity of the range so as to ultimately exterminate themselves.

Most of the national parks act as wildlife refuges and dispersal from them aids in stocking the surrounding territory. When contiguous lands are not available for range for some of the larger forms such as elk and bison, active control measures are enforced upon the National Park Service. In such cases the problem then becomes a matter of disposal, controlled public hunting outside the park boundaries, or removal for restocking in depleted areas. Yellowstone National Park has been a most important source of elk for restocking various portions of the formerly extensive range of this species. Within the past two years, the animals removed have been sent to Montana, Idaho, South Dakota and Virginia. The Crow Indian Agency has been interested in restocking big game animals and has obtained elk and bison from the Yellowstone.

Although hunting and trapping is prohibited in national parks, fishing is permitted in most of the lakes and streams. It is not, however, contemplated that angling will be encouraged or permitted in all waters, as the value of an aquatic as well as a terrestrial wilderness is recognized. Since the public seems to consider that fishing, where allowed in national park waters, should be superior to that outside, hatcheries and rearing pools have been established in a number of the parks in an effort to meet this demand. The Emergency Conservation Work program has made increased improvements of this type possible. In the past, exotic fish have been introduced into some waters, but, under a recently defined policy, only native species will be used in the future for restocking new waters.

The National Park Service and the U. S. Bureau of Fisheries maintain a cooperative agreement which consists of an exchange of fish and spawn for restocking waters within and outside of the national parks.

Prior to the inception of the Emergency Conservation Work program, the Wildlife Division consisted of three employees, one of them a fish expert. Under ECW a number of trained biologists have been added to the staff. These men conduct surveys and plan and supervise CCC projects beneficial to wildlife. Some of these projects are food and cover planting, construction of fish rearing ponds and development of wildlife waterholes.

A new phase of National Park Service activity is the cooperation extended through the operation of CCC camps on State, county, and municipally owned park areas. While, in general, this type of work has consisted mainly of construction facilities for intensive recreation on relatively small areas, there is a very definite wildlife conservation aspect to this program, not only from the standpoint of the preservation and restoration of wildlife habitats but from the intimate contact which large numbers of people have with the wildlife. Perhaps the fact that State, county, and municipal park administrators are becoming aware of the value of wildlife under natural conditions as a phase of outdoor recreation will be one of the outstanding and lasting achievements of this work. The nature of the wildlife work in these smaller, locally owned units follows the general policy of work done upon national parks, but the problems differ. In the former, the wildlife technicians of the Service have bee: more concerned with the prosecution of the work and less with policy-forming functions carried on in the national parks where the Service has exclusive jurisdiction.

Wildlife management of the National Park Service is a problem not of rearing a crop of game to be harvested by the gun, but in perpetuating native forms under natural conditions for the esthetic, cultural, and scientific use of the public.

For a more detailed description of the wildlife policies and management of the National Park Service, the following publications should be consulted:

Wright, George M., Joseph M. Dixon, and Ben H. Thompson
Fauna of the National Parks of the United States (Supt. of Documents, Washington, D. C., 20 cents a copy), May 1932, (1933), 157 pp., 56 figs.

This report is the first of a series on the vertebrate fauna of the national parks. Problems involving conservation of the biota are discussed. The report is the result of a preliminary wildlife survey to establish a National Park Service wildlife policy, to aid resident park officials in handling difficult animal problems, to determine the existing status of wildlife species, to analyze unsatisfactory conditions, and to set up a plan for the development of wildlife management.

The report discusses the original fauna of each park and its history during the period of white man's influence, surveys the present wildlife situation and develops a management plan. Problems arising from the joint use of wilderness areas by man and animals are described.

The status of big game species, predators, fur-bearing mammals, waterfowl, and other birds in each park is given.

The report sets up a well-defined policy for the protection and preservation of all species in national parks and monuments in order to present a natural wildlife picture independent of man.

Wright, George M., and Ben H. Thompson
Fauna of the National Parks of the United States (Supt. of Documents, Washington, D. C., 20 cents a copy), Fauna Series No. 2, July 1934 (1935), 142 pp., 61 figs. Abstracted in Wildlife Review No. 1, September 1935, p. 19.

Wright, George M.
Big Game of our National Parks, the Scientific Monthly, August, 1935, Vol. XLI, pp. 141-147. Abstracted in Wildlife Review No. 2, January 1936, p. 15.

Borell, A. E.
Preservation of Wildlife in National Parks of Southwest is Big Problems, New Mexico (208 W. Gold Ave., Albuquerque, N. M., 15 cents a copy), 13(11), Nov. 1935, pp. 30, 31. Abstracted in Wildlife Review No. 2, January 1936, p. 15.

Thompson, Ben H.
History and Present Status of the Breeding Colonies of the White Pelican (Pelecanus erythrorhynchos) in the United States. Contribution of Wildlife Division, Occ. Paper No. 1, 1933, National Park Service, Washington, D. C., 82 pp., 3 figs.

The decline in numbers and major nesting colonies of the white pelican in the United States is shown, together with notes on the status of the birds in Canada. Much information has been compiled from literature and correspondence with field observers. Particular attention is paid to the Yellowstone Park colony, formerly controlled, but now fully protected. Regarding the value of pelicans, the author states that "where actual investigations have been made, in the majority of cases the pelicans have been found to feed principally upon fish of little or no human value." More research on the value of white pelicans is needed but present information shows that "the pelican is not the destructive pest it is assumed to be." The author believes that the pelican may prove to be exceedingly valuable as a control upon non-game, non-commercial fish, and, therefore, of indirect benefit to more desirable species.

House of Representatives, 74th Congress, First Session
Conservation of Wildlife. Hearings before the Select Committee on Conservation of Wildlife Resources, Part I, U. S. Government Printing Office, Washington, D. C., 1935, pp. 1-121. Statements of Arno B. Cammerer, Director, National Park Service, and George M. Wright, Chief, Wildlife Division, National Park Service. 69-92. Abstracted in this issue of Wildlife Review, p. 2.

A summary is given of the activities of the National Park Service in wildlife conservation including the functions of the Wildlife Division and the wildlife technicians employed under the Emergency Conservation Work Program. The fish planting policy of the National Park Service is reviewed.

News and information leaflets under the title of Nature Notes are issued by National Parks as follows:

Acadia -- Issued bimonthly by the Park Naturalist of Acadia National Park, Bar Harbor, Maine. No price quoted.

Crater Lake -- Issued during July, August, and September by Naturalist Division, Crater Lake National Park, Medford, Oregon. No price quoted.

Glacier -- Issued monthly by the Park Naturalist and distributed by the Educational Division, Glacier National Park, Belton, Montana. No price quoted.

Grand Canyon -- Issued monthly by the Grand Canyon Natural History Association, Grand Canyon, Arizona. Ten cents per copy or $1.00 per year.

Hawaii -- Issued bimonthly, Hawaii National Park, Hawaii. No price quoted.

Hot Springs -- Issued irregularly, Hot Springs National Park, Arkansas. No price quoted.

Lassen Volcanic -- Issued occasionally, Lassen Volcanic National Park, Mineral, California. No price quoted.

Mount Rainier -- Issued quarterly by the Naturalist Department, Mount Rainier National Park, Longmire, Washington. No price quoted.

Rocky Mountain -- Issued quarterly with the cooperation of the Rocky Mountain Nature Association. Dorr G. Yeager, Park Naturalist, Rocky Mountain National Park, Estes Park, Colorado. No price quoted.

Yellowstone -- Issued regularly, Yellowstone National Park, Yellowstone Park, Wyoming. No price quoted.

Yosemite -- Issued monthly by the Yosemite Natural History Association, Yosemite National Park, California. No price quoted.

Zion -- Issued monthly by the Superintendent, Zion National Park, Utah. No price quoted.

National Parks Bulletin, issued irregularly, no price quoted, is the organ of The National Parks Association, 700 Twentieth St., N. W., Washington, D. C.

Wildlife aspects of the Resettlement Administration land program

More than 3,800,000 acres of misused and idle land are being devoted to wildlife through the land use program of the Resettlement Administration. Thirty-seven projects included in this program are being developed primarily for wildlife protection, while 133 additional projects have wildlife conservation included in the end uses of the land along with forestry, grazing, and recreation.

A total of 738,000 acres is being acquired in cooperation with the Bureau of Biological Survey for use as migratory waterfowl refuges. Comprising 32 different project areas, these lands are strung along the major flyways of the Mississippi Valley, the Atlantic and Gulf Coasts, and the Pacific Northwest. In the dry areas of the northern plains, these projects, which include large areas of land to be re-flooded, will serve a dual purpose of conserving water and providing bird refuges. Development of these lands is now being undertaken by the Biological Survey.

An outstanding project of this kind is the Lower Souris Refuge in North Dakota, embracing an area of 38,000 acres and extending a distance of 40 miles along the river. Construction of eight dams will enable the control and conservation of spring floods to maintain desirable water levels.

The five other projects devoted primarily to wildlife protection consist of submarginal farms and adjoining tracts which will be utilized primarily for upland game conservation. Prominent among them is the New York Wildlife Project, in which 32,000 acres are being acquired in nine separate tracts. The areas will later be turned over to the State of New York for administration. In the meantime development work is being carried on by the Resettlement Administration to improve the game cover, increase natural food supplies, make game reconnaissances, institute predatory animal control, and improve ponds and streams.

The Resettlement Administration is buying more than 9,000,000 acres in all under its land use program, and in all projects where possible, game conservation will be carried out in conjunction with other uses. Wildlife management on these lands is often one of the important economic factors in restoring idle and wasted lands to a state of productive value.

The Sandhills project, a 60,000-acre tract in North Carolina, is a multiple use project of this type, where wildlife development is coordinated with reforestation, erosion control, and recreation. Hatcheries are being built on Lake McKinney to restock streams and lakes in the project area and a game farm and food and cover areas are being established. Other developments which have an indirect bearing on wildlife include the construction of 14 dams, and reforestation on 16,000 acres.

In the Little Missouri project in North Dakota where the topography ranges from gently rolling plains to canyons, conservation of upland game is being undertaken in connection with use of the land for grazing purposes.

The work of the Resettlement Administration is organized on a twelve-regional basis and some forty game managers and wildlife specialists are at present employed. Their distribution by States is as follows: Alabama 1, Arkansas 1, Connecticut 3, Florida 9, Georgia 6, Indiana 1, Maryland 1, Michigan 1, Minnesota 1, New York 4, Ohio 1, Oklahoma 1, South Carolina 6, Texas 1, and Wisconsin 7.

BIOLOGICAL BIBLIOGRAPHIES

Sporting magazines and conservation department organs

[Supplement; previous installment in Wildlife Review No. 3, pp. 32-34.]

Of general scope

Chase Magazine. Monthly, $2.00 a year. Hernando Bldg., Lexington, Ky. (Devoted to fox hunting.)

Hounds and Hunting. Monthly, $1.50 a year. 250 S. Park St., Decatur, Ill.

Hunting and Fishing. Monthly, 50 cents a year. National Sportsman Co., Inc., 275 Newberry St., Boston, Mass.

Red Ranger. Monthly, $1.00 a year. Rushville, Mo. (Devoted to fox hunting.)

Of local scope

California Conservationist. Monthly, $1.00 a year, single copy 15 cents. Department of Natural Resources, State Office Bldg., Sacramento, Calif.

Illinois Conservation. Quarterly, no price quoted. Department of Conservation, Springfield, Ill.

South Dakota Conservation Digest. Monthly, mimeographed. Game and Fish Department, Pierre, S. Dak.

Wisconsin Conservation Bulletin. Monthly, mimeographed. Conservation Department, Madison, Wis.

Wyoming Wild Life. Monthly, mimeographed. State Game and Fish Department, State Capitol Bldg., Cheyenne, Wyo.

American periodicals relating to birds and mammals

Birds

The Archaeopteryx. Mimeographed. Saint Anselm's College Ornithological Soc., Manchester, N. H.

Audubon Annual Bulletin. No price quoted. Illinois Audubon Society, Chicago, Ill.

Audubon News-Letter. Monthly, mimeographed, no price quoted. Audubon Society of Missouri, 690 Bonita Ave., Webster Groves, Mo.

The Audubon Year Book. $1.00 a copy. Indiana Audubon Society, 4030 Park Ave., Indianapolis, Ind.

The Auk. Quarterly, $4.00 a year, single copy $1.00. American Ornithologists' Union, 3200 22nd St., N., Cherrydale, Va.

Bird-Lore. Bi-monthly, $1.50 a year, single copy 30 cents. Harrisburg, Pa.

Bird Migration Memorandum. Annually, multigraphed. U. S. Biological Survey, Washington, D. C.

Bulletin of the Ornithological Club of Massachusetts. Annually, 50 cents a copy. Essex County Ornithological Club of Mass., Inc., Salem, Mass.

The Cardinal. Semi-annually, 50 cents a year, single copy 25 cents. The Audubon Society of the Sewickley Valley, Edgeworth, Sewickley, Pa.

Cassinia. Biennially, $1.00 a copy. Proceedings of the Delaware Valley Ornithological Club, Academy of Natural Sciences, Philadelphia, Pa.

The Condor. Bi-monthly, $3.00 a year, single copy 50 cents. Cooper Ornithological Club, Museum of Vertebrate Zoology, Berkeley, Calif.

The Flicker. Quarterly, 50 cents a year, single copy 15 cents. 4405 Lyndale Ave. So., Minneapolis, Minn.

The Gull. Monthly, $1.00 a year, single copy 15 cents. Audubon Association of the Pacific, 1695 Filbert St., San Francisco, Calif.

Iowa Bird Life. Quarterly, $1.00 a year. Winthrop, Iowa.

Jack-Pine Warbler. Quarterly, multilithed, $1.00 a year, single copy 25 cents. Kent Scientific Museum, Grand Rapids, Mich.

Long Island Bird Notes. Weekly, $2.00 a year, single copies not sold. 1032 W. Broadway, Woodmere, N. Y.

The Migrant. Quarterly, 75 cents a year. Tennessee Ornithological Society, Nashville, Tenn.

The Nebraska Bird Review. Quarterly, $1.00 a year, single copy 25 cents. Nebraska Ornithologist's Union, Lincoln, Nebr.

The Oologist. Monthly, 50 cents a year. R. M. Barnes, Lacon, Ill.

The Oriole. Quarterly, $1.00 a year. 959 Drewry St., N. E., Atlanta, Ga.

The Prothonotary. Monthly, mimeographed, 50 cents a year. Buffalo Ornithological Society, Buffalo, N. Y.

The Raven. Issued irregularly, mimeographed, no price quoted. Bulletin of the Virginia Society of Ornithology, Lynchburg, Va.

Vermont Botanical and Bird Clubs Joint Bulletin. Annually, no price quoted. Burlington, Vt.

The Wilson Bulletin, Quarterly, $1.50 a year, single copy 50 cents. Wilson Ornithological Club, Sioux City, Iowa.

Bird Banding

Bird Banding. Quarterly, $2.00 a year, single copy 50 cents. Charles B. Floyd, 95 South St., Boston, Mass.

Bird Banding Notes. Issued irregularly, mimeographed. U. S. Biological Survey, Washington, D. C.

Inland Bird Banding News. Quarterly, mimeographed. W. I. Lyon, 124 Washington St., Waukegan, Ill.

News from Bird-Banders. Quarterly, mimeographed. Western Bird Banding Assoc., Museum of Vertebrate Zoology, Berkeley, Calif.

Birds and Mammals

The Murrelet. Tri-annually, $1.50 a year, single copy 50 cents. Pacific Northwest Bird and Mammal Society, Olympia, Wash.

Mammals

Journal of Mammalogy. Quarterly, $4.00 a year, single copy $1.00. William H. Burt, Museum of Zoology, University of Michigan, Ann Arbor, Mich.

Fur Industry

American Fur Breeder. Monthly, $1.00 a year, single copy 15 cents. St. Peter, Minn.

Black Fox Magazine. Monthly, $2.00 a year, single copy 25 cents. Harris-Fox-Hoffman, Inc., 404 Fourth Ave., New York, N. Y.

Fur Animals. Monthly, $1.00 a year. Gough Publishing Co., Kansas City, Mo.

Fur Farming and Trapping. Monthly, $1.00 a year. Woodland, Mich.

Fur Trade Review. Monthly, $3.00 a year. 370 Seventh Ave., New York, N. Y.

National Fur News. Monthly, 50 cents a year. 1756 Broadway, Denver, Colo.

Deer browse, The more important recent publications on

Bartlett, Ido H., and Joseph H. Stephenson
A preliminary survey of deeryards in the Upper Peninsula of Michigan, Papers of the Mich. Acad. Sci., Arts, and Letters, 10, 1928 (1929), pp. 411-416, fig. 30.

Browse species briefly mentioned.

Clepper, Henry E.
The deer problem in the forests of Pennsylvania, State Dept. Forests & Waters, Bul. 50, 45 pp., 17 figs., 6 tables, 1931.

Mostly on damage from the forestry point of view. A table, pp. 23-25, shows the parts eaten and the degree of utilization (whether light, medium, or heavy) of 110 species of woody plants. Bibliography of 18 titles, none of which are repeated here.

Dayton, Wm. A.
Important western browse plants, U. S. Dept. Agr. Misc. Publ. 101, 213 pp., 12 pls., 45 figs., July 1931.

Written mainly from the livestock point of view, but contains numerous references to utilization by deer and other wildlife. A comprehensive compilation, thoroughly indexed, and with an extensive bibliography.

Dixon, Joseph S.
A study of the life history and food habits of mule deer in California, Calif. Fish & Game, 20(3), July 1934, pp. 181-282, figs. 47-111; 20(4), October 1934, pp. 315-354, figs. 116-135, Tables I-V. Separately issued and repaged, 1-146, figs. 1-85, Tables I-V.

More than a fourth of the entire paper is devoted to food habits, and the statements relative to browse species and their utilization are the most comprehensive on record for any American ruminant.

Forbes, E. B., and S. I. Bechdel
Mountain laurel and rhododendron as foods for the white-tailed deer, Ecology, 12(2), April 1931, pp. 323-333, 4 figs., 1 table.

The toxic principle of these plants is poisonous to deer, though the animals seem not to eat, of their free will, enough of either to exceed their tolerance for them.

Forbes, E. B., and L. O. Overholts
Deer carrying capacity of Pennsylvania woodland, Ecology, 12(4), Oct. 1931, pp. 750-752.

Report of experiment on four yearling deer in captivity and list of plants eaten which included all available green browse.

Hosley, N. W., and R. K. Ziebarth
Some winter relations of the white-tailed deer to the forests in north central Massachusetts, Ecology, 16(4), Oct. 1935, pp. 535-553, 5 tables.

Report on field observations on deer feeding and on stomach analyses. Degree of utilization indicated for numerous plants and 11 species named as the most important. Bibliography.

MacDonald, H. H.
Big game management, 183 pp., illus. Dallas, Texas. 1934.

"Browse", pp. 72-74, "Woods", 74-76, include lists of important food plants, based apparently on California observations.

Maynard, L. A., Gardiner Bump, Robert Darrow, and J. C. Woodward
Food preferences and requirements of the white-tailed deer in New York State. State Conservation Dept. and College of Agriculture, 1935, 35 pp., 4 figs., 7 tables.

Experimental investigation. A table (p. 21) gives the relative preferences of deer among 45 browse species, arranged in three groups as best liked, readily eaten, and poorly eaten.

Robinson, C. S.
Feeding habits and forage requirements of Rocky Mountain mule deer in the Sierra Nevada Mountains, Journ. Forestry, 29(4), April 1931, pp. 557-564.

Forage requirements best met by vegetation composed of about 60% browse, 25% weeds, and 15% grasses and grass-like plants. The latter eaten chiefly in spring and where browse species are scarce. Notes on several closely utilized browse plants.

Robinson, Cyril S.
A study of plants eaten by deer on the Santa Barbara National Forest, Forest Service, Santa Barbara, Calif., 8 pp., mimeographed.

Palatability ratings and notes on utilization of a long list of trees, shrubs, grasses, and other herbs; mosses, fungi, and mistletoe also mentioned.

Robinson, Cyril S.
Truck trails and firebreaks; their use by deer on the Santa Barbara National Forest, Journ. Forestry, 33(11), Nov. 1935, pp. 940-942.

Notes on utilization of 5 browse species.

Spiker, Chas. J.
Some late winter and early spring observations on the white-tailed deer of the Adirondacks, Roosevelt Wild Life Forest Expt. Sta. Bul. 6(2), New York State Coll. Forestry Bul. 6(1), pp. 327-385, figs. 170-227, 9 maps, Oct. 1933.

Field notes on browse species. Bibliography of 24 titles.

Townsend, M. T., and M. W. Smith
The white-tailed deer of the Adirondacks, Roosevelt Wild Life Forest Expt. Sta. Bul. 6(2), New York State Coll. Forestry Bul. 6(1), pp. 153-325, Pl. 4, figs. 77-169, Oct. 1933.

Description of feeding habits and partial list (18 groups, p. 196) of food plants of deer in the Adirondacks, some of them more fully discussed. Extensive bibliography.

[Trippensee, R. E.]
Wildlife Handbook, U. S. Forest Service, Region Nine, North Central Region, Milwaukee, Wis. 1935. Mimeographed, pp. 181-183, 205-210.

Compiled information mostly relating to Michigan, New York, and Pennsylvania. See present entries under Bartlett, Clepper, and Maynard.

Wakeman, Max C.
Deeryards of the Upper Peninsula of Michigan, Papers of the Michigan Acad. of Sci., Arts, and Letters, 19, 1933 (1934), pp. 333-339.

Brief catalogue of browse species.

Winecoff, Thos. E. [Compiler]
The Pennsylvania deer problem, State Board of Game Commrs. Bul. 12, 66 pp., illus., revised edition, 1930.

In the main a statement about overbrowsing. Contains much scattered information about browse species but no tabulation or other ordered statement of them.

NOTES AND NEWS

Bird Migration Memorandum No. 1, issued by the Biological Survey, April 1, 1936, contains notes on length of service of numerous migration observers and a summary of the spring migration of 1935, chiefly in tabular form.

Monthly Report on Impending Programs of Land Drainage and Water Storage, No. 2, April 1, 1936, issued by the National Resources Committee, lists many projects the object of which is given as 'fish and game protection'.

The ninth and last appointment under the present program of Cooperative Research in Wildlife Management was made April 9 by the transfer of Dr. Lawrence E. Hicks from the Soil Conservation Service to the Biological Survey to take charge of the work in Ohio. A statement similar to those made for the previously established projects in WILDLIFE REVIEW, No. 2, Jan. 1936, pp. 25-29, follows:

Ohio State University, Columbus.

Lawrence E. Hicks.

Otterbein College, BS, 1928; Ohio State University, MS, 1929, Ph.D., 1933; Research Ornithologist, Ohio Division of Conservation, 1929-1930; instructor, Department of Botany, Ohio State University, 1929-1934; forest ecologist, New York State Museum, 1931; biologist, in charge Region 3, U. S. Soil Conservation Service, 1934-1936; U. S. Biological Survey, biologist, 1936-

Member, Sigma Xi, Gamma Alpha, Ecological Society of America, American Association Advancement Science, Fellow of Ohio Academy of Science, American Ornithologists' Union (life), Wilson Ornithological Club (life) (Secy. 1931-), Cooper Ornithological Club (life), American Society Mammalogists, American Limnological Society, American Botanical Society, Inland Bird-Banding Association (Vice-President 1934-), American Society of Wildlife Specialists, Biological Society of Washington.

Principal papers: About 120 scientific papers on Ornithology (ecology, distribution, life histories, starling, bird banding, faunal papers), Botany (taxonomic and ecological studies of aquatics, floral papers, vegetation and forest ecology surveys), and Wildlife conservation (life histories of game species, measurements of animal populations, management recommendations, conservation principles).

The Pennsylvania Board of Game Commissioners announces the establishment of a training school for student officers in game administration. Objectives of the school are to assure fully qualified and trained officers in all branches of the field service, to increase efficiency in game protection and management, and to reduce administrative costs. Courses of instruction will include such special subjects as legal procedure, wildlife conservation methods, refuge acquisition and management, propagation and restocking, and game management.

The general purposes of the Soil Conservation and Domestic Allotment Act, namely, of keeping vegetative cover on the land and encouraging agricultural practices that will combat erosion, would seem to harmonize well with programs for the benefit of wildlife. It was thought that a general program of food patch planting might be fitted in but the regulations differ so considerably by regions that this has not proved practicable. The results to date are not as extensive as hoped for, but they do constitute a worth while beginning and recognition of the right of wildlife to consideration.

One of the practices for which reimbursement to farmers may be made that has adaptability to the needs of wildlife is the seeding of soy beans,

velvet beans, cowpeas, sweet clover, lespedeza, and crotalaria when such crops are not grazed or pastured, or are not harvested for hay or seed, and the entire growth is allowed to remain on the land for cover over the winter. Payment at various rates can be made for this practice in the East Central Region, including the States of Delaware, Maryland, Virginia, West Virginia, Kentucky, Tennessee, and North Carolina. Another example is the use of sorghums, sudan grass, and millets when left on the land in States of the Southern Region, namely, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, Oklahoma, and Texas, and still another the use of sorghums and sudan grass in specialized strip cropping in certain counties of New Mexico. Where such practices involve the use on acreage formerly in soil-depleting crops of approved soil-conserving and soil-building practices, payments may amount to $10.00 or more per acre.

State Conservation Commissions have been asked to give publicity to the opportunities that seem to exist for increasing winter cover and food supply for wildlife and to cooperate with State and County Agricultural Conservation Committees through which the Soil Conservation and Domestic Allotment Act will be largely administered.

Exclusive of the District of Columbia headquarters office force, the Soil Conservation Service has the following numbers of biologists, foresters, etc., assigned to wildlife management work in the States named: Arizona 3, California 2, Colorado 2, Georgia 1, Idaho 2, Illinois 2, Iowa 2, Kansas 2, Maryland 1, Minnesota 6, Mississippi 1, Missouri 1, New Mexico 6, New York 2, North Carolina 17, North Dakota 2, Oregon 1, Pennsylvania 3, South Carolina 2, South Dakota 3, Texas 2, Utah 1, Washington 2, West Virginia 1, and Wisconsin 8.

The Forest Service, Region 8, has entered into cooperative agreements with the States of Georgia and Tennessee calling for active management of wildlife (including fishes) on a half-million acres of National Forest in northern Georgia, and on a 125,000-acre demonstration area in Tennessee, and providing for equal division of receipts from license fees for limited and regulated hunting and fishing on these tracts.

AUTHOR INDEX FOR THIS ISSUE

	Issue and Page
Agersborg, H. P. K.	4- 6
Aldous, C. M.	4- 8
Bade, August	4-18
Bennett, H. H.	4- 3
Bissonnette, T. Hume	4-19
Brown, C. B.	4- 3
Bump, Gardiner	4-19
Chapman, Floyd B.	4-15
Chapman, Herman H.	4-15
Clark, Leonard B.	4-19
Clausen, George C.	4-19
Crevoling, T. Q.	4-14
Csech, Albert G.	4-19
Curtis, Paul A.	4- 3
Dalke, Paul D.	4- 8
Darling, J. N.	4- 6
Donley, Chas. F.	4-20
Dowdell, Ralph L.	4- 4
Dunn, Malcolm	4-18
Ehrhart, E. O.	4- 4
Elton, Charles	4- 4
Errington, Paul L.	4-10, 4-13, 4-16
Frison, T. H.	4-16
Gabrielson, I. N.	4-15
Gerstell, Richard C.	4- 6
Gordon, George B.	4-16
Gordon, Seth	4-17
Grange, Wallace	4- 9
Green, R. G.	4-4, 4- 5
Greene, S. W.	4-13
Hamerstrom, Frederick N., Jr.	4- 9
Hamilton, W. J., Jr.	4- 7
Hesley, N. W.	4-18
Kennedy, I. N.	4- 9
Leopold, Aldo	4-2, 4- 5
Leonard, Samuel L.	4-19
MacDonald, H. H.	4-10
McAtee, W. L.	4-3, 4- 5
Morton, James N.	4-14
Munro, J. M.	4- 7
Murdoch, Earl C.	4-16
Peters, Harold S.	4- 5
Preston, John F.	4-18
Robinson, Cyril S.	4-7, 4-17
Shillinger, J. E.	4-4, 4- 5
Smith, Harry S.	4- 6
Swynnerton, G.	4- 4
Titus, Harold	4-14
Trippensee, R. E.	4-15
Vorhies, Charles T.	4-17

WI

Ag
Al
Ba
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Bu
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AUTHOR INDEX FOR THIS ISSUE

	Issue and Page		Issue and Page
Agersborg, H. P. K.	4- 6	Gordon, George B.	4-16
Aldous, C. M.	4- 8	Gordon, Seth	4-17
Bade, August	4-18	Grange, Wallace	4- 9
Bennett, H. H.	4- 3	Green, R. G.	4-4, 4- 5
Bissonnette, T. Hume	4-19	Greene, S. W.	4-13
Brown, C. B.	4- 3	Hamerstrom, Frederick N., Jr.	4- 9
Bump, Gardiner	4-19	Hamilton, W. J., Jr.	4- 7
Chapman, Floyd B.	4-15	Hesley, N. W.	4-18
Chapman, Herman H.	4-15	Kennedy, I. N.	4- 9
Clark, Leonard B.	4-19	Leopold, Aldo	4-2, 4- 5
Clausen, George C.	4-19	Leonard, Samuel L.	4-19
Creveling, T. Q.	4-14	MacDonald, H. H.	4-10
Csech, Albert G.	4-19	McAtee, W. L.	4-3, 4- 5
Curtis, Paul A.	4- 3	Morton, James N.	4-14
Dalke, Paul D.	4- 8	Munro, J. M.	4- 7
Darling, J. N.	4- 6	Murdoch, Earl C.	4-16
Donley, Chas. F.	4-20	Peters, Harold S.	4- 5
Dowdell, Ralph L.	4- 4	Preston, John F.	4-18
Dunn, Malcolm	4-18	Robinson, Cyril S.	4-7, 4-17
Ehrhart, E. O.	4- 4	Shillinger, J. E.	4-4, 4- 5
Elton, Charles	4- 4	Smith, Harry S.	4- 6
Errington, Paul L. 4-10, 4-13,	4-16	Swynnerton, G.	4- 4
Frison, T. H.	4-16	Titus, Harold	4-14
Gabrielson, I. N.	4-15	Trippensee, R. E.	4-15
Gerstell, Richard C.	4- 6	Vorhies, Charles T.	4-17